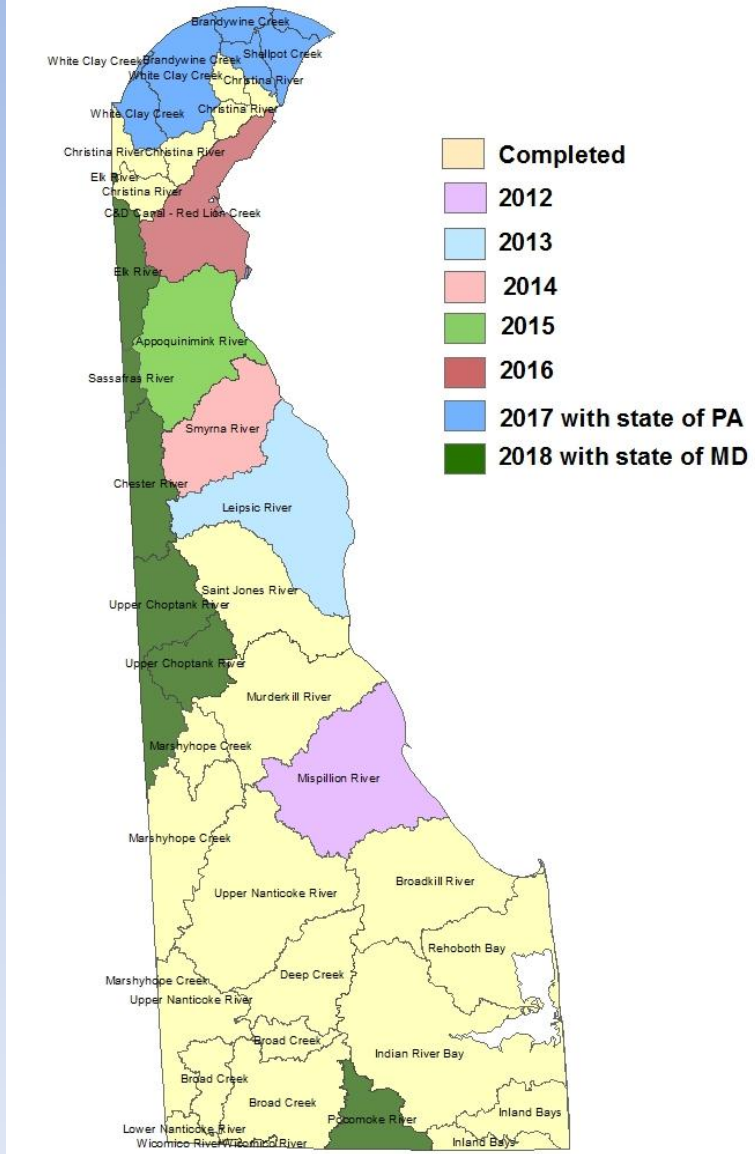
Wetland Function Estimates from Landscape Level Analysis and Field Assessments

Alison Rogerson

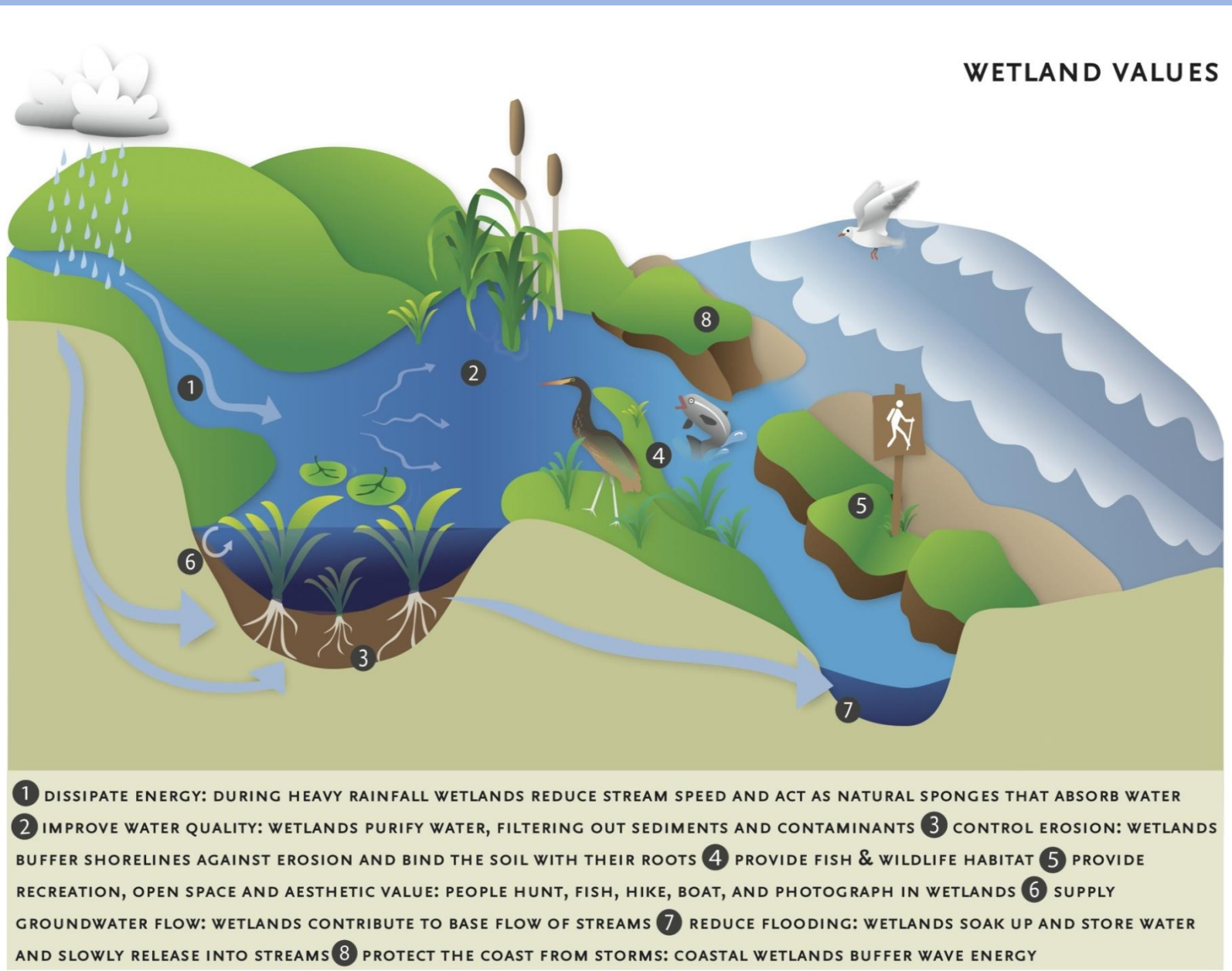
Wetland Monitoring and Assessment Program

February 29, 2012

- DNREC's Wetland Monitoring and Assessment Program has visited 800 wetland sites across Delaware in the past 10 years.
- Tested, calibrated and refined sampling methods

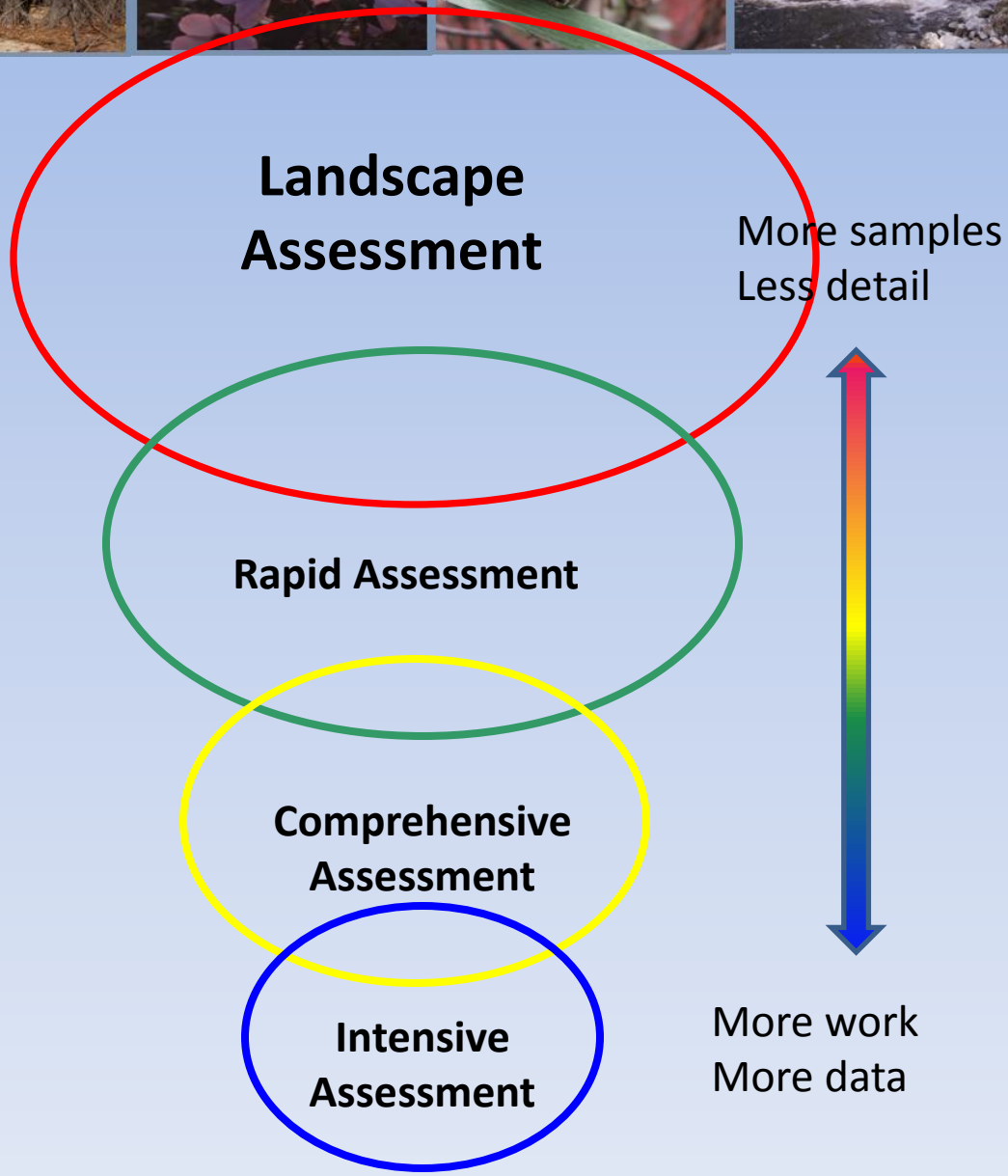


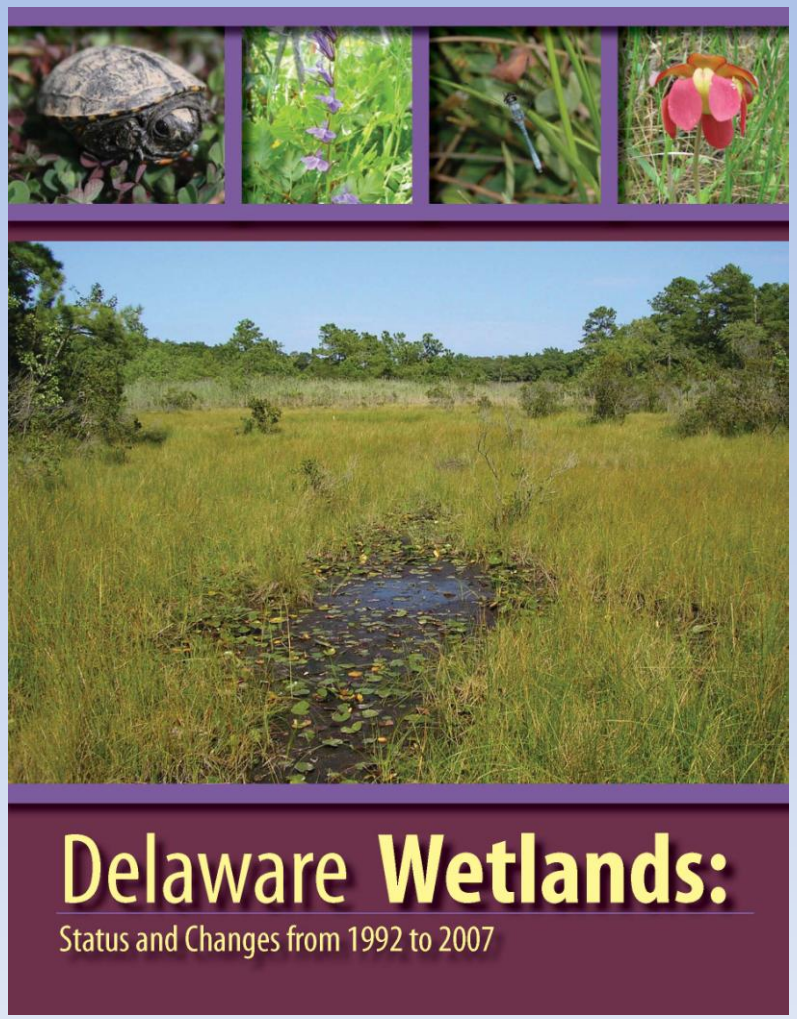
- WMAP has completed 770 rapid assessments
- Stressor checklists provide wetland condition scores
- Can extrapolate to predict watershed level wetland condition



Kristen Berry

- More detailed, intensive assessments provide function scores
- Functional data from 275 comprehensive assessments
- Function level data is labor, time and resource heavy





Past status report only tracked acreage

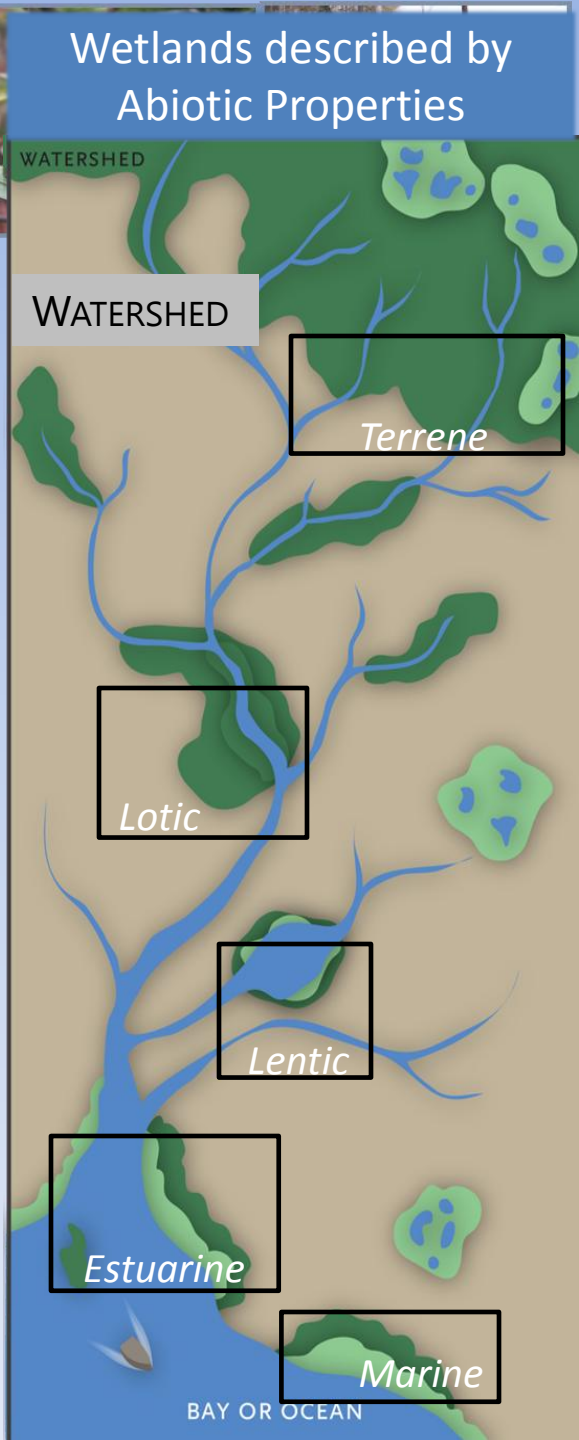
Need to measure wetland functional capacity--the services wetlands provide

Tracking acreage of losses gives perspective on extent of changes but says little about how changes affect wetland functions




USFWS NWI Plus

- Landscape scale
- Created by R. Tiner, reviewed by expert panel, pilot tested in 5 watersheds
- Predicts the potential for certain wetland types to perform certain functions
- Expanded abiotic classification (LLWW; landform, landscape position, waterflow, water body)
- Functional correlations for U.S. Northeast region



What does this mean for data?

- 2007 DE Wetlands LLWW Functions GIS layer
  - Cowardin (PFO1/3C)
  - LLWW Code (LS1BATH)
  - 11 function columns
  - Moderate/high
  - Stream shading
  - Wood duck habitat

Landscape vs. Field data

Compare on a watershed scale

Assist method refinement

Gauge confidence in landscape results

Functional comparison

USFWS	DNREC
Surface water detention	Hydrology
Coastal storm surge detention	
Streamflow maintenance	
Nutrient transformation	Biogeochemistry
Carbon sequestration	
Sediment retention	
Shoreline stabilization	Plant Community
Unique wetland plant community	
Stream shading	Habitat
Waterfowl habitat	
Other wildlife habitat	
No match	Buffer

USFWS

Ranks functions as ‘moderate’ or ‘high’ using research-supported BPJ and correlations

DNREC

Scores functions 0-100 using validated assessment data

Highlighted results of Delaware's analysis

% of DE wetlands likely performing at moderate to high levels

High end (>90%)

- Nutrient transformation
- Carbon sequestration
- Non-waterbird wildlife habitat

Low end (<35%)

- Coastal storm surge detention
- Waterfowl/waterbird habitat
- Fish and aquatic invertebrate habitat

Highlighted results of Delaware's analysis

Functional Acreage Changes 1992-2007

- Streamflow Maintenance- sources of streams

  -5,888 acres

- Coastal Storm Surge Detention- tidal wetlands and nontidal subject to storm surges

  - 180 acres

- Waterfowl, waterbird and wood duck habitat

  + 251 acres

Landscape level to field data comparison using Inland Bays

- Flat (n=37) ranging in condition
  - Hydrology: balanced
  - Biogeochemistry: balanced
  - Plant Community: underestimated by NWI+
  - Habitat: slightly overestimated by NWI+
  - Buffer: N/A

Comparison using Inland Bays

- Riverine (n=21)
  - Hydrology: overestimated by NWI+
  - Biogeochemistry: overestimated by NWI+
  - Plant Community: underestimated by NWI+
  - Habitat: balanced
  - Buffer: N/A

Future plans:

- Cross check landscape and field data
- Employ function data from each basin (n=275)
- Re-visit field sites to improve correlations
- Improve the evaluation technique
- Cooperate with revisions and refinement

R.W. Tiner 2003

Correlating enhanced national wetlands inventory data with wetland functions for watershed assessments: a rationale for Northeastern U.S. wetlands

Alison Rogerson
(302) 739-9939
alison.rogerson@state.de.us

Delaware Wetlands

Purify Provide Protect

http://de.gov/delawarewetlands

Ralph Tiner
U.S. Fish and Wildlife Service
National Wetlands Inventory
Hadley, MA
http://www.fws.gov/northeast/wetlands

U.S. FISH & WILDLIFE SERVICE
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